Card Detector

Team Member

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Problem Statement

The goal of this project is to develop a computer vision system capable of detecting playing cards in an image and recognizing their rank and suit. Such a system can support applications like automated game analysis, augmented reality card games, or teaching tools that visually identify cards. Key challenges include coping with varying lighting, card orientations, and potentially overlapping cards.

Dataset

We will be using the datasets provided in the Kaggle notebook "Train Your first PyTorch Model [Card Classifier]" , and "Playing Card" both of these data sets contains labeled playing cards for classification task. While the datasets is focused on card classification (rank + suit), we will extend it by adding bounding-box annotations or use preprocessing to detect cards in images, if needed, we will augment the dataset with rotation, lighting changes, or synthetic scenes to create detection examples.

Proposed Method

The solution will be combine object detection and classification techniques. First, we will train a detection model (e.g., using a variant of the YOLO architecture) to locate card bounding boxes in input images. Next, for each detected card region, we will apply a Convolutional Neural Network (CNN) classifier (trained using the Kaggle datasets) to determine its rank and suit. Implimitation will be in Python, using libraries such as PyTorch for model training and OpenCV for image preprocessing and drawing bounding- boxes. If we have more time we want to try coverting the mode to TensorFlow Lite or TensorFlow.js to enable mobile or web-browsing deployment.